Final Report

Historic American Engineering Record
Narrative Format
N.J. Route 35 Bridge
(State Bridge 1210-155)
Woodbridge Township
Middlesex County, New Jersey

Prepared for: State of New Jersey Department of Transportation
Bureau of Environmental Analysis
Trenton, New Jersey

Prepared by: Kise Franks & Straw Inc.
Cultural Resources Group
Philadelphia, Pennsylvania

August 1996

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HISTORIC AMERICAN ENGINEERING RECORD

N.J. ROUTE 35 BRIDGE (State Bridge 1210-155) HAER No. NJ-106

Location: U.S. Route 9, Spanning U.S. Route 1, Woodbridge vicinity, Middlesex County, New Jersey.

UTM: 18.559400.4490460
Quad: Perth Amboy, New Jersey

Date of Construction: 1937

Engineer: S.A. Snook

Architect: A.I. Lichtenberg

Present Owner: State of New Jersey
Department of Transportation
1035 Parkway Avenue
CN 600
Trenton, New Jersey 08625

Present Use: Pedestrian and vehicular bridge.

Significance: The N.J. Route 35 Bridge is a typical example of a single span, steel encased thru-girder highway overpass built during the tenure of Morris Goodkind, chief bridge engineer for the New Jersey State Highway Department from 1925 to 1955. Goodkind emphasized the integration of architecture and aesthetics in bridge design and received awards from the American Society of Civil Engineers and the American Institute of Steel Construction for his designs. The Route 35 Bridge has intricate architectural detailing that capitalizes on the sculptural qualities of poured concrete used in combination with decorative tiles and cast aluminum. The bridge is part of the Perth Amboy Bypass, which the New Jersey Department of Transportation designed in 1937 to alleviate traffic congestion through Woodbridge and Perth Amboy, New Jersey.

Project Information: This documentation was undertaken in the spring of 1996 in accordance with a Memorandum of Agreement between the Federal Highway Administration and the New Jersey State Historic Preservation Officer as a mitigative measure prior to bridge replacement.

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The N.J. Route 35 Bridge currently carries U.S. Route 9 over U.S. Route 1 in Woodbridge Township, Middlesex County, New Jersey. Over the course of eight decades, the route designations of the roads involved have undergone numerous changes. N.J. Route 25 became U.S. Route 1, known locally as Jansen Street. The N.J. Route 35 Extension, also known as the Perth-Amboy Bypass, became U.S. Route 9. These two roads intersect at the bridge. The third road, which the bypass circumvented, is N.J. Route 4. It became N.J. Route 9, then U.S. Route 9, and is currently N.J. Route 35. The New Jersey Department of Transportation currently refers to the bridge as the U.S. Route 9 Bridge over U.S. Route 1. For the purposes of this report; however, it will be referred to by its historic name, the Route 35 Bridge.

Both highways at this interchange are dualized, and the overpass carries U.S. Route 9 southbound over U.S. Route 1 northbound. The two routes merge at this point and become U.S. Route 1&9, a major transportation artery serving the densely populated areas of Union, Essex, Hudson, and Middlesex Counties. U.S. Route 1&9 continues north to the approach to the Holland Tunnel in Jersey City.[1] South of the overpass, U.S. Route 9 follows a coastal path to its termination point in Cape May, and U.S. Route 1 continues in a southwesterly direction towards Trenton and Philadelphia.

Both roads also serve as commuter corridors that carry a large amount of truck traffic partially due to their use as a free alternative to the New Jersey Turnpike. Local officials met to discuss the problem of heavy traffic on what they term "an outdated highway" after several fatal accidents occurred in the vicinity of the Route 35 Bridge in 1991.[2] Intermittent commercial enterprises, including diners, car dealerships, and a junkyard, line the roadway near the Route 35 Bridge. Isolated tracts of detached, single-family houses are interspersed with this commercial development. Small medians covered with grass and neglected shrubbery flank the east side of the bridge, while the right-of-way on the west side abuts the car dealership and junkyard sited on either side of U.S. Route 1 northbound.

The original intersection of U.S. Route 1, originally known as N.J. Route 25, and U.S. Route 9, first designated N.J. Route 4, occurred at the Woodbridge cloverleaf, approximately one-quarter mile north of this bridge.[3] N.J. Route 4 was one of the original fifteen routes in the New Jersey Highway System established by the state legislature in 1917. This route originally connected Rahway in northern New Jersey with Absecon on the shore, via Perth Amboy, Red Bank, Long Branch, Point Pleasant, Toms River, and New Gretna.[4] A surge in private automobile ownership in the 1920s caused the Highway Department to submit a proposal to the state legislature for a larger, more comprehensive state highway system in 1927. This legislation

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[1] TAMS Consultants, Inc., "Routes U.S. 1&9 Corridor Historic Engineering Survey: Historical Narrative and Assessment of Significance and Integrity, August 1991" (New Jersey Department of Transportation, 1991, photocopy), 1. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[2] "Police Target 1 and 9: Convergence Worries Officials," *The News Tribune*, 16 November 1991.

[3] The cloverleaf in Woodbridge was constructed in 1929 and is considered to be the earliest application of this design of grade separation in the United States. Carl W. Condit, *American Building Art* (New York: Oxford University Press, 1960), 283.

[4] New Jersey State Highway Department, *Twenty-Fourth Annual Report of the New Jersey State Highway Department 1917* (Union Hill, NJ: Hudson Printing Company, 1918), 87. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

introduced forty-five new routes, many incorporating existing 1917 routes.[5] At that date, new construction extended N.J. Route 4 north to the Hudson River Bridge Plaza and south to Cape May.[6] N.J. Route 25, which later became U.S. Route 1, was created in 1927 to link Jersey City with Camden via Elizabeth, Woodbridge, Cranbury, Hightstown, and Burlington.[7] Traffic volume in the Woodbridge area continued to increase throughout the 1920s due to the expansion of the truck freight industry and the growth of shore-related tourism.[8]

The New Jersey State Highway Department was a national leader in highway design at the time N.J. Routes 4 and 25 were constructed. The vast increase in automobile ownership in the 1920s presented the Department with a growing array of traffic problems, forcing it to adopt new methods and technologies in order to accommodate automobile traffic in the state. In 1927, the Highway Department became one of the first in the United States to propose dual-highway construction on heavily traveled routes.[9] New Jersey is credited with the design and construction of the nation's first traffic circle (Camden, 1925) and cloverleaf interchange (Woodbridge, 1929), and the first use of formal economic calculations with regard to highway placement and design (Pulaski Skyway between Jersey City and Newark, 1930).[10] Frederick Lavis, a former railroad engineer, was instrumental in developing these types of calculations. By taking into consideration the number of car minutes that would be saved, economic calculations justified larger initial capital investments in infrastructure improvements.[11] Grade separations such as the Route 35 Bridge constituted a significant percentage of the improvements made during the 1930s. New Jersey also took a leading role in the construction of "superhighways," interregional precursors of the modern interstate system. The 1929 Sanborn Fire Insurance Map for Woodbridge, New Jersey indicates N.J. Route 25's superhighway designation .[12]

The considerable amount of through traffic on New Jersey's highways prompted the Department to investigate and utilize bypasses as early as 1929, "by reason of our geographical location between the metropolitan areas of New York and Philadelphia and the new outlets being provided to those centers of population by the construction of bridges over the Hudson and Delaware Rivers."[13] In 1937, the New Jersey Highway Department developed plans to build a bypass for N.J. Route 9 around the urban centers of Perth Amboy and Woodbridge.

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[5] H. Jerome Cranmer, *New Jersey in the Automobile Age: A History of Transportation*, vol. 23 of The New Jersey Historical Series (Princeton, NJ: D. Van Nostrand Company, Inc., 1964), 61.

[6] New Jersey Senate and General Assembly, *An Act to Establish a State Highway System*, Chapter 319, 1927, p. 713. The Hudson River bridge plaza denotes the New Jersey approach to the George Washington Bridge, then under construction.

[7] Ibid., 715.

[8] A.G. Lichtenstein & Associates, Inc., "The New Jersey Historic Bridge Survey - September 1994 Draft" (New Jersey Department of Transportation, 1994, photocopy), 41. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[9] Spencer Miller, Jr., "Modern Highway in America," in *Highways in our National Life: A Symposium*, ed. by Jean Labatut and Wheaton J. Lane (Princeton, NJ: Princeton University Press, 1950), 107.

[10] Ibid., 103.

[11] TAMS Consultants, Inc., 20.

[12] *Insurance Map of Woodbridge Township Including Villages of Woodbridge, Fords, Hopelawn, Avenel, Colonia, Iselin, Sewaren, and Port Reading, New Jersey* (New York: Sanborn Map & Publishing Company, 1929).

[13] New Jersey State Highway Department, *Annual Report*, 1929, 3. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

The Camden & Amboy Railroad, which connected Philadelphia and New York, spurred industrial development around Perth Amboy, South Amboy, and Woodbridge, New Jersey in the mid-nineteenth century.[14] The Amboys were major distribution points for coal shipments. Access to an inexpensive fuel source, navigable channels for shipping, and an abundance of clay deposits fostered the growth of the brick and terra cotta industries around Woodbridge.[15] Local examples of these operations included : W.H. Berry Co. Fire Brick Factory, M.D. Valentine Co. Fire Brick and Drain Tile, C.W. Boyton Hollow Brick and Drain Pipe Co., and Federal Terra-cotta.[16] By the 1920s, however, copper refining had replaced the ceramic industry as the major economic force in the area.[17]

The need to bypass Perth Amboy and Woodbridge in the late 1930s resulted from an increase in traffic flow associated with the completion of N.J. Route 1&9, the Holland Tunnel, and the Pulaski Skyway in 1932.[18] The improved sections of N.J. Route 1&9 terminated at the municipal border between Elizabeth and Linden in Union County, New Jersey north of the Route 35 Bridge. From that point, southbound traffic merged onto "the main State Highway routes leading south," namely roads like N.J. Routes 4 and 25.[19] Prior to construction of the bypass, tourists from the New York City area traveling to the shore drove through downtown Woodbridge and Perth Amboy. The bypass alleviated what was then known as the "Amboys Bottleneck" by routing traffic around these urban centers.[20] Planners anticipated that people traveling to the New York World's Fair would cause additional traffic congestion in Woodbridge Township. This factor provided additional impetus for completing this section of highway by the summer of 1939.[21] After its construction, drivers could avoid ten local traffic lights while speeding along a "modern four lane highway" with advantages like center safety islands and grade separations.[22] *The Ford's Beacon*, a local weekly newspaper, noted another major innovation for the highway. According to the article, the lighting scheme planned for the Route 35 Extension utilized twenty-five 600-candle power lamps and fifty-one 400-candle power lamps making N.J. Route 35 "the best illuminated highway in the state."[23]

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[14] Kise Franks and Straw, "Survey of Historic Architectural Resources at N.J. Route 35, Section 7 Victory Bridge (Structure No. 1209-155) over Raritan River, City of Perth Amboy and Borough of Sayerville, Middlesex County, New Jersey - Draft Report" (New Jersey Department of Transportation, 1996, photocopy), 12. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[15] Woodford W. Clayton, *History of Union and Middlesex Counties, New Jersey* (Philadelphia: Everts & Peck, 1882), 425.

[16] *Fire Insurance Maps for Woodbridge, New Jersey* (New York: Sanborn Map & Publishing Co., 1886,1891, 1909, and 1916).

[17] Kise Franks and Straw, 15.

[18] TAMS Consultants, Inc., 1.

[19] TAMS Consultants, Inc., 13.

[20] "Traffic Snarls on Amboy Avenue to Be Eased by New Link to Shore, "*Woodbridge Independent*, 2 June 1939.

[21] "Sterner OK's Completed Job at R.R. Crossing: Formally Accepts the Elimination on Upper Green Street," *Woodbridge Leader-Journal*, 10 November 1938.

[22] "Traffic Snarls on Amboy Avenue to Be Eased by New Link to Shore, "*Woodbridge Independent*, 2 June 1939.

[23] "Latest Highway Lighting to Be Installed Here, "*Ford's Beacon*, 22 July 1938.

The N.J. Route 35 Extension eased the passage of through traffic traveling between shore points in southern New Jersey and New York City, while N.J. Route 9 handled local traffic within the industrial region of Perth Amboy and Woodbridge. Construction of the bypass fostered increased development in Woodbridge Township during the early 1940s. Local historian Dorothy Ludewig observed that improvements like the Edison Bridge and the bypass "were instrumental in bringing more people into the township."[24] Completion of other major transportation improvements, such as the juncture of the New Jersey Turnpike and the Garden State Parkway south of the Route 35 Bridge, continued to spur development in the area through the 1960s.[25] In 1953, the numerical designations of the two routes were switched. N.J. Route 35 became U.S. Route 9, and U.S. Route 9 became N.J. Route 35. Additionally, N.J. Route 25 was redesignated U.S. Route 1 at that time.[26]

The Perth Amboy Bypass, officially designated the N.J. Route 35 Extension, consisted of three new sections of road. N.J. Route 35 originally connected Lakewood in the south with the South Amboy bridge plaza. The addition of Sections 12, 13, and 14 extended the road from the bridge plaza across the Raritan River on the Edison Bridge. The road then continued to its juncture with U.S. Route 25 at the Route 35 Bridge near the intersection of Jansen and Julius Streets on the outskirts of the village of Woodbridge.[27] Sections 12 and 13 were situated north of the Raritan River. Section 14, including the newly constructed Edison Bridge and its approach ramps, was south of the river. The first section to be completed was the three-mile Section 13 within which the Route 35 Bridge is located. State Highway Commissioner E. Donald Sterner attended the opening ceremonies held the week of June 1, 1939.[28]

Construction of Section 13 began during the summer of 1937.[29] This section of road included four overpasses. Work began on all four structures in Section 13 during September and October 1937. Although the New Jersey Highway Department contracted the road work and the bridge construction separately, P. Camillo & Company served as the contractor for both aspects of the project.[30] The bridge was assigned Federal Aid Project Number 128-B.[31] Franklin Contracting

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[24] Dorothy F.D. Ludewig, *Timely Tales Told of Woodbridge Township Tercentenary Edition 1669-1969* (Woodbridge, NJ: Woodbridge Township Schools and Board of Education, 1970), 52.

[25] Ibid, 53.

[26] N.H. Bettigole Co., Consulting Engineers, "Structure No. 1210-155, U.S. Route 9 S.B. Over U.S. Route 1 N.B., Woodbridge Township, Middlesex County - Bridge Inspection Report" (New Jersey Department of Transportation, Bureau of Bridge Inspection, 1975, photocopy), 6. On file at the New Jersey Department of Transportation, Bureau of Bridge Inspection, Trenton, New Jersey.

[27] New Jersey State Highway Department, "Route 35 Extension, Section 12 - Perth Amboy Bypass Extension from Smith Street to King Georges Road, *"Annual Report of the Construction Division*, 1939. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[28] "Traffic Snarls on Amboy Avenue to Be Eased by New Link to Shore, "*Woodbridge Independent*, 2 June 1939.

[29] New Jersey State Highway Department, "Route 35 Extension, Section 13 Perth Amboy By-pass, Extension from King Georges Road to Route 25,"*Annual Report*, 1937. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[30] New Jersey State Highway Department, "Route 35 Extension, Section 13," *Annual Report of the Construction Division*, 1938. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[31] New Jersey State Highway Department, "Route #35, Sec. #13 STA. 466+56," *Annual Report*, 1938. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

Company began construction on the southern portions of the bypass, Sections 12 and 14 adjacent to Perth Amboy, the following year.[32]

Although the area at the intersection of Julius and Jansen Streets in Woodbridge was subdivided in 1937, only a few nearby properties were improved. The construction of the new Route 25 and 35 interchange did, however, involve demolition of a house and outbuildings belonging to "C. & S. Peru" sited at the planned location for the south abutment of the overpass.[33] This construction also resulted in the reconfiguration of the existing intersection. The New Jersey Highway Department used portions of Jansen Street to create N.J. Route 25 northbound and interrupted Julius Street at its juncture with N.J. Route 35 northbound.

According to the construction drawings, S.A. Snook, working in conjunction with A.I. Lichtenberg, developed the design for the Route 35 Bridge.[34] It appears that Snook took responsibility for the structural aspects of the bridge's design, while Lichtenberg developed the overall architectural design program. Lichtenberg headed the architectural section of the New Jersey Bridge Division established by Morris Goodkind in 1927.[35] Goodkind served as chief engineer for the New Jersey Highway Department between 1925 and 1955.[36] He won numerous awards from both the American Society of Civil Engineers and the American Institute of Steel Construction for his designs including: the Raritan River Bridge, the Shark River Bridge, the Cheesequake Creek Bridge, and the Absecon Boulevard Bridge.[37] Goodkind approved the design of the Route 35 bridge, which reflected his belief that bridge design should emphasize aesthetics.[38] According to the 1994 draft of the New Jersey Historic Bridge Survey, the collaboration between Goodkind and Lichtenberg "resulted in New Jersey being considered a national leader in the area of bridge aesthetics."[39] The design program of the Route 35 Bridge incorporates many decorative motifs seen in New Jersey State Highway Department bridges of this era including the sculptural use of concrete and the incorporation of decorative faience tiles.

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[32] New Jersey State Highway Department, "Route 35 Extension, Section 12 Perth Amboy By-pass, Smith Street to King Georges Road, "Annual *Report*, 1937. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[33] New Jersey State Highway Department, "As Built Plans of Route 35 Ext. Section 13, Perth Amboy By-Pass Extension from King George's Road to Route 25 Middlesex County," Control No. 1210, Structure No. 148. Original construction drawings on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey.

[34] New Jersey State Highway Department, "As Built Plans of Route 35 Ext. Section 13, Perth Amboy By-Pass Extension from King George's Road to Route 25 Middlesex County," Control No. 1210, Structure No. 148, Job No. 152, Drawing No. 139. Original construction drawings on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey.

[35] A.G. Lichtenstein & Associates, Inc., "The New Jersey Historic Bridge Survey - September 1994 Draft," 46.

[36] "Morris Goodkind, Engineer, 80, Dies: Designer of Pulaski Skyway, Built Burma Bridges," *New York Times*, Saturday, 7 September 1968, p. 29.

[37] Winfield Scott Downs and Edward N. Dodge, eds., *Who's Who in Engineering: A Biographical Dictionary of The Engineering Profession - 1954*, 7th ed. (New York: Lewis Historical Publishing Company, Inc., 1954), 953. Similar entries for Morris Goodkind appear in earlier editions including those published in 1937, 1941, and 1948.

[38] For Goodkind's personal treatise on bridge aesthetics see "Architectural Considerations in Bridge Design," *Journal of the American Concrete Institute* 7 (September/October 1935): 29-38.

[39] A.G. Lichtenstein & Associates, Inc., "The New Jersey Historic Bridge Survey - September 1994 Draft," 46.

Moderne and Art Deco details characterize many of the bridges built in New Jersey during Goodkind's tenure. The most common pre-World War II bridge type built during Goodkind's term was the encased steel thru-girder bridge, of which the Route 35 Bridge is a representative example.[40] This bridge type offered a standardized, inexpensive solution for single-span grade separations. Goodkind emphasized the encasement of stringers for protection from the elements, thereby preventing corrosion.

The Route 35 Bridge is a skewed, single span highway overpass with encased steel thru girders. The thru-girder design, which engineers used to effectively bridge short spans, was the most common type of girder bridge in New Jersey in the early twentieth century.[41] In this design, the floor beams, which support the deck, rest on the bottom flange of a pair of girders. The average skew angle of this bridge is approximately 56 degrees.[42] The overpass's overall length is approximately 98 feet and includes an approximate single span length of 82 feet (center-to-center of bearings) on its west side and 92 feet on its east side due to the skew. Bridge width is approximately 44.5 feet inclusive of a single sidewalk on the west side. Clear roadway width on the bridge measures 32 feet curb to curb and includes two driving lanes. The clear roadway width below the Route 35 Bridge also measures 32 feet. There are no sidewalks along Route 1 beneath the bridge. Route 1 originally carried three lanes of traffic under the Route 35 Bridge; however, the number of lanes was reduced to two after submission of the 1975 bridge inspection report.[43] The minimum vertical clearance below the bridge is 14 feet.

The reinforced concrete deck slab measures 10.75 inches thick with a 4-inch layer of replacement asphalt on the surface. The original asphalt block wearing surface has been removed.[44] The concrete curbs on the bridge are faced with a 6-inch by 4-inch steel angle.[45] A 7-foot-wide reinforced concrete sidewalk on the west and a 3-foot-wide brush curb on the east flank the bridge roadway. Monolithically cast concrete also encases the floorbeams below the deck with the girders. Encased stiffeners run parallel to the main girders and connect floorbeams to increase their rigidity.

A pair of built-up, steel plate girders measuring approximately 96 inches deep with 24-inch wide flanges rest on reinforced concrete abutments. Two different decorative treatments ornament the surface of the concrete-encased thru girders. On the exterior facade of the bridge, small raised pilasters ornamented with chevrons divide the concrete that encases the girders into recessed rectangular panels. A series of alternating vertical and battered articulated piers punctuate the interior faces of the girders above the bridge deck. Sets of elongated tile panels are inset above these piers on the interior faces. Individual rectangular faience tiles with "X" shaped details alternate with lettered tiles stating: "New Jersey, State Highway Route 35, 1937." Small, square mosaic tiles border the yellow and green rectangular tiles. The west exterior face of the bridge

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[40] A.G. Lichtenstein & Associates, Inc., "Draft New Jersey Historic Bridge Survey, 1992," Structure #1210-155. On file at the Bureau of Environmental Analysis, New Jersey Department of Transportation, Trenton, New Jersey.

[41] A.G. Lichtenstein & Associates, Inc., "The New Jersey Historic Bridge Survey - September 1994 Draft," 65,66.

[42] N.H. Bettigole Co., Consulting Engineers, 7.

[43] N.H. Bettigole Co., Consulting Engineers, "Structure Inventory and Appraisal Sheet."

[44] N.H. Bettigole Co., Consulting Engineers, 7.

[45] N.H. Bettigole Co., Consulting Engineers, 8.

exhibits a simpler treatment with plain, white tile panels reading: "State Highway Route 25," perhaps to enhance visual clarity for the benefit of oncoming traffic.[46] The current condition of these tiles is poor. Many individual tiles are cracked, broken, or detached; however, the inscriptions remain legible.

Arched balustrades with an exposed aggregate finish surmount the wing walls. The angular aggregate used in the balustrades differs from the pebbly texture seen in the detailing of the central section of the girder. A dentil coping, comprised of an ovolo molding broken by a series of simple modillions, separates the balustrade from the face of the wing wall. Simple vertical scoring accents the faces of the wing walls. The end posts of the bridge measure approximately 4 feet high on their interior face and terminate on their outside edge with a cavetto profile endpiece.[47] These posts are bevelled at the top and battered on their outside face. A band of glazed faience tiles composed of downward pointing triangles alternating with scalloped floral wedges accent the posts just above their junction with the balustrades. Lichtenberg's construction drawings incorporate recessed panels measuring approximately 3 feet by 3 feet into the inside face of the endposts. Remnants of hardware remain within some of these panels, but these appear to be associated with modern, metal road markers.

The profile of the main piers on the Route 35 Bridge parallels that of the end posts. They have bevelled caps, tile borders, battered exterior faces, and low, stepped bases. Each main pier also prominently displays a 2-foot 7-inch diameter depiction of the New Jersey State Seal rendered in tile on its exterior face. The seal depicts Ceres and Liberty on a banner inscribed "Liberty 1776 Prosperity." Between them is a shield with three plows, and above it is the sovereign's helmet surmounted by a horse's head. The bridge construction plans provide explicit specifications regarding the coloration of these elements.[48] According to a local newspaper article, the Mueller Mosaic Tile Company of Trenton fabricated the mosaic tile for the seal.[49]

Cast aluminum panels measuring 8 inches wide and .25 inches thick are centered on the interior face of the main piers. The panels were originally attached to both the top and the face of the pier; however, large sections of the face panels have been removed. Most of the top sections are intact, and they repeat the chevron pattern exhibited on the cast concrete pilasters across the exterior faces of the girders.

The bridge's reinforced concrete substructure consists of two U-shaped abutments set on spread footings. The overall length of the south abutment is approximately 75 feet 6 inches. The north abutment's length measures 79 feet 4 inches, and their average height is 13 feet 8 inches.[50] The

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[46] New Jersey State Highway Department, Division of Bridges, "As Built Plans of Route 35 Ext. Section 13, Perth Amboy By-Pass from King George's Road to Route 25 Middlesex County," Control No. 1210, Structure No. 148, Drawing No. 148. Original construction drawings on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey.

[47] New Jersey State Highway Department, Division of Bridges, "As Built Plans of Route 35 Ext. Section 13, Perth Amboy By-Pass from King George's Road to Route 25 Middlesex County," Control No. 1210, Structure No. 148, Drawing No. 147. Original construction drawings on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey.

[48] Ibid.

[49] "Great Seal to Be Used on New By-Pass Bridge: On Route 35 Near Woodbridge Cloverleaf," *Woodbridge Leader-Journal*, 18 November 1938.

[50] N.H. Bettigole Co., Consulting Engineers, 7.

girders rest on steel bearings. The south abutment contains the expansion bearings and the north abutment the fixed bearings.[51] The wing walls vary in length from a minimum of 25 feet 4 inches to a maximum of 40 feet 4 inches. Beneath the bridge, the exterior face of the abutments exhibit 3-foot-wide decorative pilasters and recessed panels cast into the wall. The pilasters extend to just below the bridge seat, and the wall panels, located between pilasters, are recessed approximately 1 inch. Recessed lighting fixtures once fit into panels at the top of the central pilasters. The cast aluminum, holophane tunnel lighting fixtures that were specified in the construction drawings have been removed. Loose fitting boards currently cover some of these panels. Cast iron pull boxes, originally covered with aluminum plates embossed with the letters "NJ," are located at the base of these pilasters.[52] The aluminum plates have been removed.

Since the construction of the Route 35 Bridge, the original asphalt block wearing surface has been replaced by a 4 inch thick asphalt surface.[53] The New Jersey Highway Department has installed modern metal guardrails on each wing wall and along the deck of the bridge. Original lighting units and pull boxes located on the substructure pilasters have been removed. Some minor collision damage marks the bottom exterior edge of the east girder, but no major spalling is visible. Inspection reports between 1975 and 1991 indicate that the bridge sustained only minor damage, which was repaired through regular maintenance.

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[51] N.H. Bettigole Co., Consulting Engineers, 8.

[52] New Jersey State Highway Department, Division of Bridges, "As Built Plans of Route 35 Ext. Section 13, Perth Amboy By-Pass from King George's Road to Route 25 Middlesex County," Control No. 1210, Structure No. 148, Drawing No. 148. Original construction drawings on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey.

[53] N.H. Bettigole Co., Consulting Engineers, 7.

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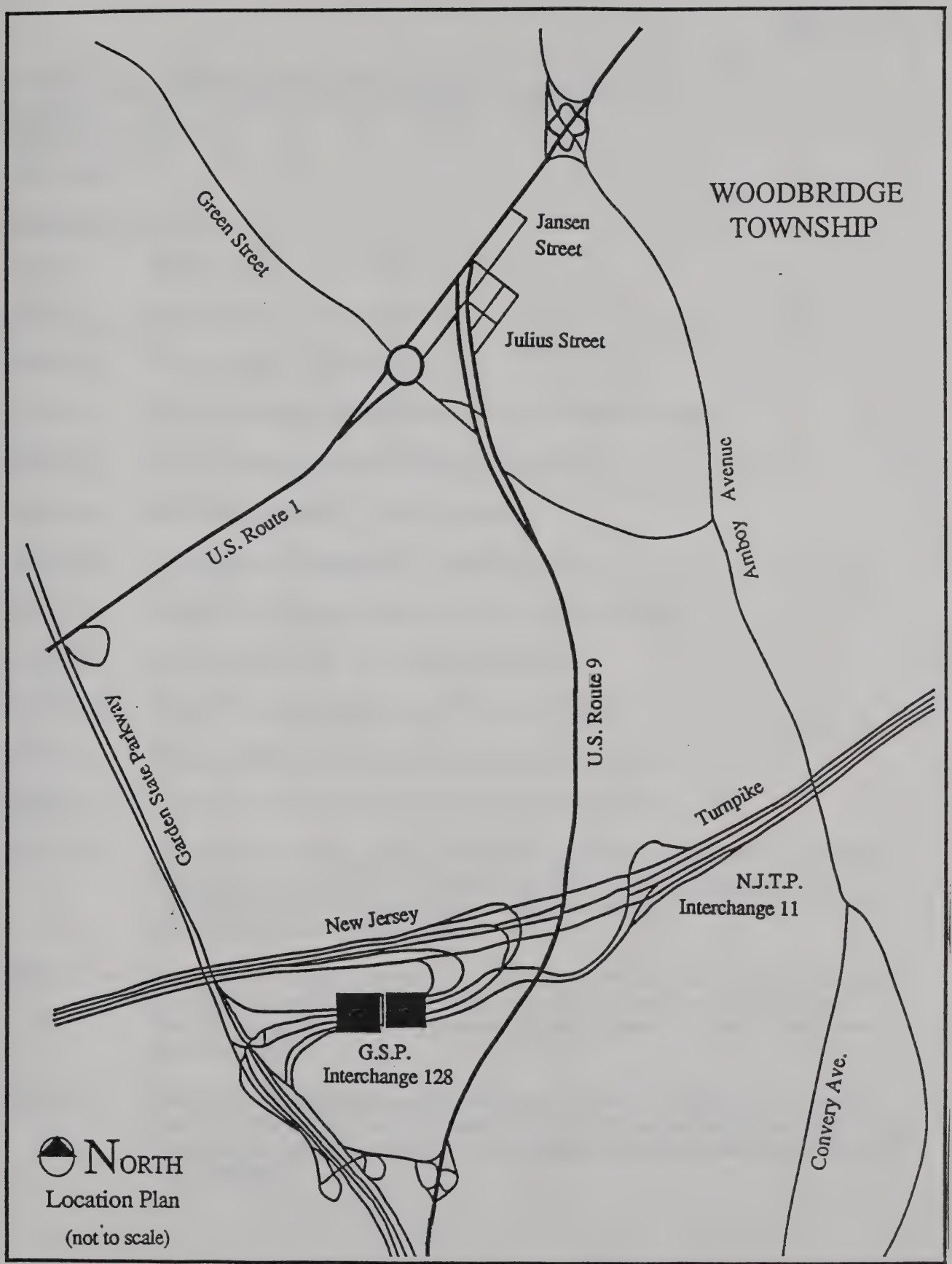
WOODBRIDGE
TOWNSHIP
Green Street
Jansen
Street
Julius Street
U.S. Route 1
Amboy Avenue
U.S. Route 9
Garden State Parkway
Turnpike
N.J.T.P.
Interchange 11
New Jersey
G.S.P.
Interchange 128
Convery Ave.
NORTH
Location Plan
(not to scale)

HISTORIC AMERICAN ENGINEERING RECORD

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HAER No. NJ-106

N.J. ROUTE 35 BRIDGE (State Bridge 1210-155)
U.S. Route 9 Southbound Spanning U.S. Route 1 Northbound
Woodbridge vicinity
Middlesex County
New Jersey

Photographer: John Herr

NJ-106-1 General view to the southwest.

NJ-106-2 East elevation. View to the west.

NJ-106-3 West elevation. View to the east.

NJ-106-4 Bridge deck from the northern approach. View to the south.

NJ-106-5 North bridge abutment. View to the northwest.

NJ-106-6 Northeast wingwall. View to the west.

NJ- 106-7 Bridge deck with tile detail. View to the west.

NJ-106-8 Detail of endpost and balustrade. View to the southwest.

NJ-106-9 Detail of main pier. View to the southwest.

NJ-106-10 Detail of cast aluminum panel. View to the west.

NJ-106-11 Detail of interior girder finish. View to the southwest.

NJ-106-12 Detail of New Jersey state seal. View to the northwest.

NJ-106-13 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 138. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. ENDPOSTS AND MAIN PIER.

NJ-106-14 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 139. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. EAST FACADE.

NJ-106-15 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 140. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. NORTH ABUTMENT.

NJ-106-16 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 141. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. SOUTH ABUTMENT.

NJ-106-17 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 142. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. WINGWALLS.

NJ-106-18 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 143. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. BEAMS AND BRIDGE DECK.

NJ-106-19 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 146. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. MAIN PIER.

NJ-106-20 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 147. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. DETAIL NEW JERSEY STATE SEAL AND ALUMINUM PANEL.

NJ-106-21 Photocopy of original construction drawing, dated 23 April 1937 -- Control No. 1210, Structure No. 152, Sheet No. 148. Microfilm on file at New Jersey Department of Transportation Records Center, Trenton, New Jersey. DETAIL TILE SIGNAGE, PILASTERS, AND INTERIOR OF BEAM.

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(State Bridge 1210- 155)
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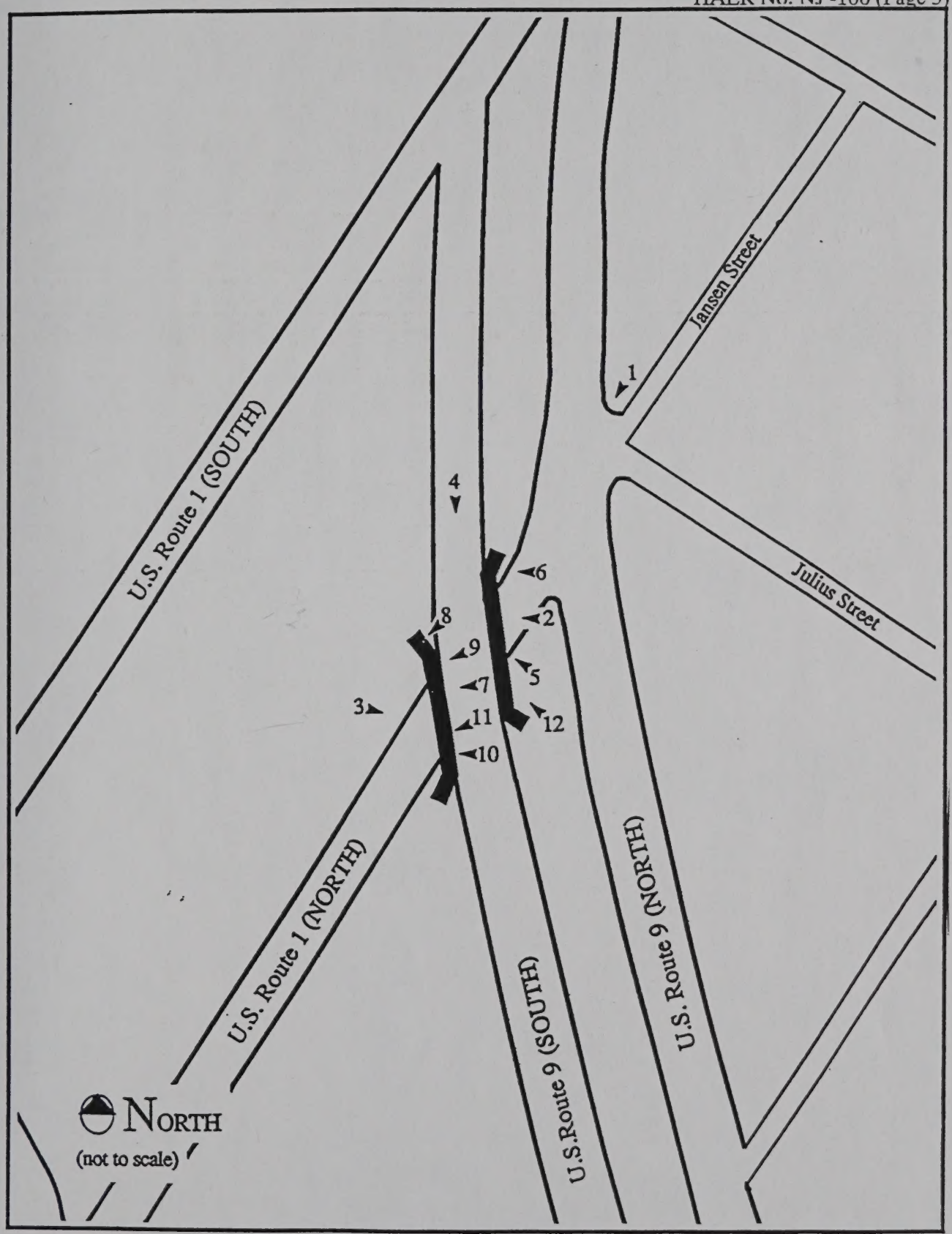

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